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Response to Office Action Mailed 04/14/2006

REMARKS

A review of the claims indicates that:

A) Claims 10, 17, 18, 21—24, 26—28, and 30—33 remain in their original form.

B) Claims 2—6, 8, 9, 11—13, 15, 16, 19, 20, 25 and 29 are previously presented.

C) Claims 1, 7, 14, 25, 34 and 35 are currently amended.

In view of the following remarks, Applicant respectfully requests reconsideration of the rejected claims.

Traversal of the §102 Rejections

Claims 1—4, 6—11, 13, 14, 16—19, 34 and 35 were rejected under §102 as being anticipated by U.S. Patent No. 5,565,864, hereinafter "Ohno." In response, the Applicant respectfully traverses the rejection.

Claim 1 recites, as amended, an encoding system for determining position and position changes of a moving member, comprising:

- a sequence of encoder marks forming incremental patterns and at least one index pattern, wherein two subsequent incremental patterns are indicative of an incremental position-change of the moving member and the index pattern is indicative of a reference position of the moving member;
- a sensor configured to view a section of the encoder-mark sequence, wherein the viewed section of the encoder-mark sequence carries redundant incremental position-change information at least in regions not disturbed by the index pattern; and
- an analyzer arranged to analyze an encoder-mark pattern in the viewed section with regard to the incremental patterns and the index pattern and to generate, in response to a pattern match found, an incremental-position-change signal and an index signal, wherein the signals are generated only after confirming a correlation greater than selected thresholds between the encoder-mark pattern and the incremental patterns and the index pattern.

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2 The Applicant notes that the Ohno reference does not disclose redundant
3 incremental position-change information at least in regions not disturbed by the
4 index pattern. Instead, Ohno discloses that a counter counts elements sensed by
5 the sensor, and thereby establishes a relative position based on the absolute
6 position (see column 6, lines 19—24). Accordingly, if the sensor misses one of
7 the elements, the counter will not advance.

8 The Patent Office has not cited Ohno as an example of use of redundant
9 incremental position-change information.

10 Thus, the Applicant's recited encoder mark sequence having redundant
11 incremental position-change information is structurally different from the
12 technology disclosed by Ohno. Additionally, the redundant information provides
13 the Applicant's claimed encoding system a functional advantage not seen by
14 Ohno, in that 'dropped' or missed mark elements do not result in an erroneous
15 relative position calculation.

16 Thus, the Applicant respectfully asserts that Ohno does not disclose the
17 elements recited, and that the §102 rejection of Claim 1 is therefore improper.
18 Accordingly, the Applicant respectfully requests that the §102 rejection of Claim 1
19 be removed, and that Claim 1 be allowed to issue, as amended.

20 In the interests of advancing prosecution of this application, and not as a
21 reflection on the validity of the rejection, the Applicant has amended Claim 1 to
22 recite, "wherein the signals are generated only after confirming a correlation
23 greater than selected thresholds between the encoder-mark pattern and the
24 incremental patterns and the index pattern". This material was found by the Office
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1 to be undisclosed by any of the references of record. Accordingly, the Applicant
2 respectfully submits that Claim 1 recites subject matter not found in any of the
3 references or record. Accordingly, the Applicant respectfully requests that the
4 Section 102 rejection of Claim 1 be removed.

5 **Claims 2—6** depend from Claim 1 and are allowable due to their
6 dependence from an allowable base claim. These claims are also allowable for
7 their own recited features that, in combination with those recited in Claim 1, are
8 neither disclosed nor suggested in references of record, either singly or in
9 combination with one another.

10 **Claim 7** recites an encoding system for determining position and position
11 changes of a moving member, comprising:

- 12 • a row of encoder marks arranged along the moving member in a
13 generally regular manner to provide incremental position-change
14 information;
- 15 • at least one index marking in the form of a predefined pattern of encoder
16 marks which represents a disturbance of the regular encoder-mark
17 arrangement;
- 18 • a sensor arrangement viewing a section of the row of encoder marks and
19 arranged to provide a viewed pattern of the encoder-mark section;
- 20 • an analyzer arranged to analyze the viewed pattern to generate
21 incremental-position-change signals in response to detection of the
22 encoder marks and an index signal in response to a detection of the
23 index marking, wherein the incremental-position-change signals and
24 the index signal are generated only after the analyzer has verified a
25 correlation greater than selected thresholds between the viewed
pattern and the index marking or the encoder marks.

21 The Applicant notes that the Ohno reference does not disclose an analyzer
22 that verifies a correlation between the viewed pattern and the index marking, or
23 the viewed pattern and the encoder marks, to be higher than selected thresholds as
24 a condition of the index signal. Instead, Ohno fails to disclose a range provided by
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1 a threshold within which the accuracy a comparison of the viewed section and an
2 index mark may be made.

3 The Patent Office has indicated that aspects of thresholds as conditions are
4 not shown by the art of record.

5 Accordingly, the Applicant respectfully requests that the §102 rejection of
6 Claim 7 be removed, and that Claim 7 be allowed to issue.

7 **Claims 8—13** depend from Claim 7 and are allowable due to their
8 dependence from an allowable base claim. These claims are also allowable for
9 their own recited features that, in combination with those recited in Claim 7, are
10 neither disclosed nor suggested in references of record, either singly or in
11 combination with one another.

12 **Claim 14** is allowable for reasons similar to those seen above with respect
13 to the discussion of Claim 1 and Claim 7. Accordingly, the Applicant respectfully
14 requests that the §102 rejection of Claim 14 be removed, and that this claim be
15 allowed to issue.

16 **Claims 15—19** depend from Claim 14 and are allowable due to their
17 dependence from an allowable base claim. These claims are also allowable for
18 their own recited features that, in combination with those recited in Claim 14, are
19 neither disclosed nor suggested in references of record, either singly or in
20 combination with one another.

21 **Claims 34 and 35** have been amended in an effort to further prosecution of
22 the instant application. As such, these amendments are not an admission or
23 opinion of the validity of any of the rejections made by the Office. In particular,
24 the amendments recite, "wherein in response to an incorrect detected pattern in the
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1 viewed section, the incorrect detected pattern is set to a correct pattern closest to
2 the incorrect detected pattern". The element was previously recited by Claims 5,
3 12 and 15, and was found by the Patent Office to not be disclosed by the prior art
4 of record. Accordingly, the Office removed rejections to Claims 5, 12 and 15.

5 Therefore, in view of the amendments, as well as for other reasons not
6 stated herein due to lack of any need to do so, the Applicant submits that the
7 Section 102 rejection of Claims 34 and 35 should now be removed, and
8 respectfully asks that this be done.

9 Claims 1—4, 6—11, 13, 14, 16—19, 34 and 35 were additionally rejected
10 under §102(b) as being anticipated by U.S. Patent No. 5,239,177, hereinafter
11 "Cunniff." In response, the Applicant respectfully traverses the rejection.

12 The Applicant notes that the Cunniff reference was not cited by the Patent
13 Office, and in fact no reference was cited by the Patent Office, as an example of a
14 disclosure of "wherein the signals are generated only after the analyzer has
15 verified a correlation greater than selected thresholds between the viewed pattern
16 of the encoder-mark section and an incremental pattern or the predefined index
17 mark pattern" or similar, as recited by Claims 1, 7, 14, 35 and 36. Accordingly,
18 Cunniff does not support a Section 102 rejection, and the Applicant respectfully
19 requests that the Section 102 rejection of these claims be removed.

20 21 Traversal of the §103 Rejections

22 Claims 25—28 stand rejected under 35 U.S.C. §103(a) as being obvious
23 over Ohno in view of US patent 6,155,669, hereinafter "Donahue." In response,
24 the Applicant respectfully traverses the rejection.
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1 **Claim 25** recites a printing device having an encoding system for
2 determining position and position changes of a recording medium conveyor to
3 determine the position of a recording medium placed on the conveyor, comprising:

- 4 • a row of encoder marks arranged along the conveyor in a generally
5 regular manner to provide incremental position-change information;
- 6 • at least one index marking in the form of a predefined pattern of encoder
7 marks which represents a disturbance of the regular encoder-mark
8 arrangement;
- 9 • a sensor arrangement viewing a section of the row of encoder marks and
10 arranged to provide a viewed pattern of the encoder-mark section;
- 11 • an analyzer arranged to analyze the viewed pattern to generate
12 incremental-position-change signals on the basis of the encoder marks
13 and an index signal in response to a detection of the predefined index
14 mark pattern, wherein the analyzer is configured to extract redundant
15 incremental position-change information from the viewed section of the
16 row of encoder marks at least in regions not disturbed by the index
17 pattern;
- 18 • wherein the incremental-position-change signals are enabled to be
19 generated also in that section of the encoder-mark row in which the
20 regular en-coder-mark arrangement is disturbed by the index marking;
21 and
- 22 • wherein the analyzer sets the viewed pattern to a correct pattern
23 closest to the viewed pattern.

24 Claim 25 has been amended to recite, "wherein the analyzer sets a detected
25 pattern to a correct pattern closest to the detected pattern". As noted by the Patent
26 Office, this element is not taught or suggested by the Ohno and/or Donahue
27 references. Accordingly, the Applicant respectfully requests that the Section 103
28 rejection be withdrawn, and that Claim 20 be allowed to issue.

29 **Claims 26—28** depend from Claim 25 and are allowable due to their
30 dependence from an allowable base claim. These claims are also allowable for
31 their own recited features that, in combination with those recited in Claim 25, are
32 neither disclosed nor suggested in references of record, either singly or in
33 combination with one another.

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1 **Claims 20—24 and 29—33** were found to be allowable by the Patent
2 Office. The Applicant thanks the Examiner for examining these claims, and for
3 recognizing their allowability.

4 **Conclusion**

5 The Applicant submits that all of the claims are in condition for allowance
6 and respectfully requests that a Notice of Allowability be issued. If the Office's
7 next anticipated action is not the issuance of a Notice of Allowability, the
8 Applicant respectfully requests that the undersigned attorney be contacted for
9 scheduling an interview.

10
11 Respectfully Submitted,

12 Dated: 11 July 2006

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